

# INSTRUCTION MANUAL AMPLIFIER RELAY ES2001

## SAFETY INSTRUCTIONS

- Installation, commissioning and maintenance may only be performed by qualified personnel!
- Only connect the unit to the voltage specified in the technical data or on the type plate (observe polarity for DC)!
- The device must be disconnected from all sources of power during installation and maintenance work.
- The device may only be operated under the conditions specified in the operating instructions.



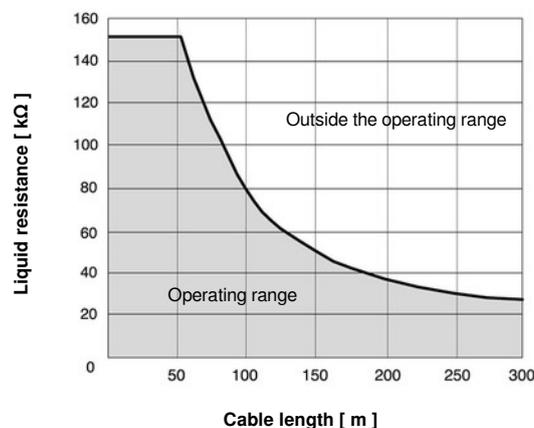
## TECHNICAL DATA

Power supply	230V/115V/48V/24V AC, $\pm 10\%$ , 50...60Hz; 24V/12V DC
Connected load	$\leq 2VA$
Relay output	2 changeover contacts, potential-free AC: Max. 250V, 5A, 500VA DC: Max. 125V, 1A, 40W
Measuring circuit	Galvanically isolated, AC voltage $<6V$ / $<2mA$
Measuring functions	MIN-MAX control MIN control or MAX control
Response sensitivity	2 adjustable ranges 1...70k $\Omega$ / 5...150k $\Omega$ or approx. 1mS...14 $\mu$ S / 0.2mS...6.5 $\mu$ S
Working principle	Open / Closed current loop
Hysteresis	About 20% of the set sensitivity value
Delay	ON/OFF delay adjustable: 0.5 to 3 seconds Adjustment through potentiometer
Cable	min. Wire cross-section 0.5mm <sup>2</sup> , shielded cable
Electrical connections	IP20, screw terminals, cable cross-section max 2.5mm <sup>2</sup>
Signalling	1x LED: "Operating" 1x LED: "Status of relay"
Ambient temperature	-15...+45°C
Dimensions	22.5x75x100mm; for DIN rail 35x7.5mm (EN 50 022); IP40
Housing (optional)	for wall-mounting 88x150x130mm; IP55

**EC Conformity: The instrument meets the legal requirements of the current European Directives.**

## OPERATING RANGE

The capacitive resistance of long cables reduces the sensitivity of the detection.  
A standard 3-wire PVC cable has a capacitance of 100pF/m.  
The range therefore depends on the liquid resistance and on the cable length between the electrode and the relay ES2001.  
This results in an operating range according to the diagram below:



**BAMO INTERNATIONAL**

22, Rue de la Voie des Bans · Z.I. de la gare · 95100 ARGENTEUIL  
Tel +33 (0)1 30 25 83 20 Web [www.bamo.eu](http://www.bamo.eu)  
Fax +33 (0)1 34 10 16 05 E-mail [export@bamo.fr](mailto:export@bamo.fr)

INSTRUCTION MANUAL  
AMPLIFIER RELAY ES2001

10-02-2026

M-530.01-EN-AH

LEV

530-01 /1

## RECOMMENDATIONS FOR THE CABLE

- Use a multi-core cable of 0.5mm<sup>2</sup>.
- This cable must be separated from other cables.
- Above 25 m length, it is necessary to use a shielded cable.

## SETTINGS

The transparent front panel can be removed by levering it out, gently, with a screwdriver.

**Sensitivity** Potentiometer P1 and DIP S2  
To adaptat the sensitivity to the liquid conductivity.

**Note** The poorer the liquid conductivity and greater the distance between electrodes, the higher the response sensitivity must be set.

**Caution** An excessive sensitivity leads to faulty triggering.

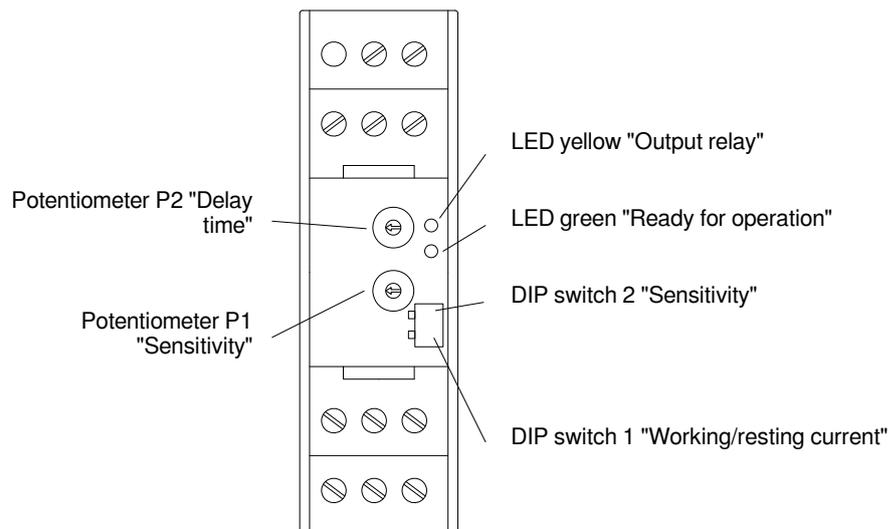
**Open / Closed current loop** DIP S1

**Delay** Potentiometer P2: To prevent multiple switching with waves on the liquid surface.

Potentiometer	Anticlockwise	Right stop
P1 Sensitivity	Minimum	Maximum
P2 Delay	approx. 0.5 seconds	approx. 3 seconds

DIP switch	ON	OFF
1	Current in the loop	No current
2	High sensitivity 5...150kΩ	Low sensitivity 1...70kΩ



### Signalling:

Green LED lights up Unit ready for operation  
Yellow LED lights up Output relay status is changed

## MAINTENANCE

When used as intended, the device is maintenance-free.

**BAMO** INTERNATIONAL

22, Rue de la Voie des Bans · Z.I. de la gare · 95100 ARGENTEUIL

Tel +33 (0)1 30 25 83 20 Web [www.bamo.eu](http://www.bamo.eu)

Fax +33 (0)1 34 10 16 05 E-mail [export@bamo.fr](mailto:export@bamo.fr)

INSTRUCTION MANUAL  
AMPLIFIER RELAY ES2001

10-02-2026

M-530.01-EN-AH

LEV

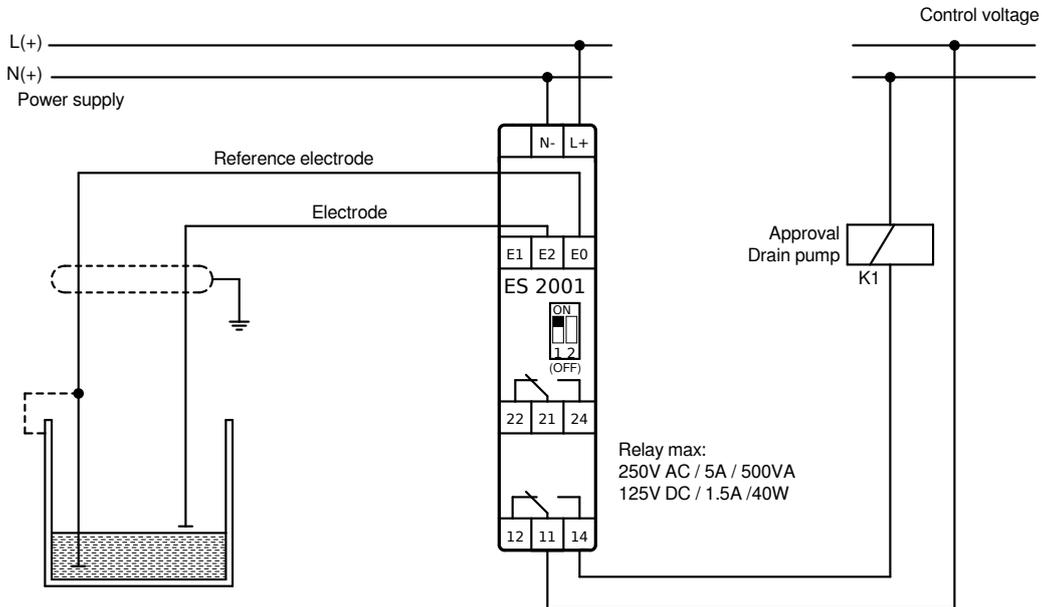
530-01 /2

## ELECTRICAL CONNECTIONS

### 1. Dry run protection / overflow alarm (2 electrodes)

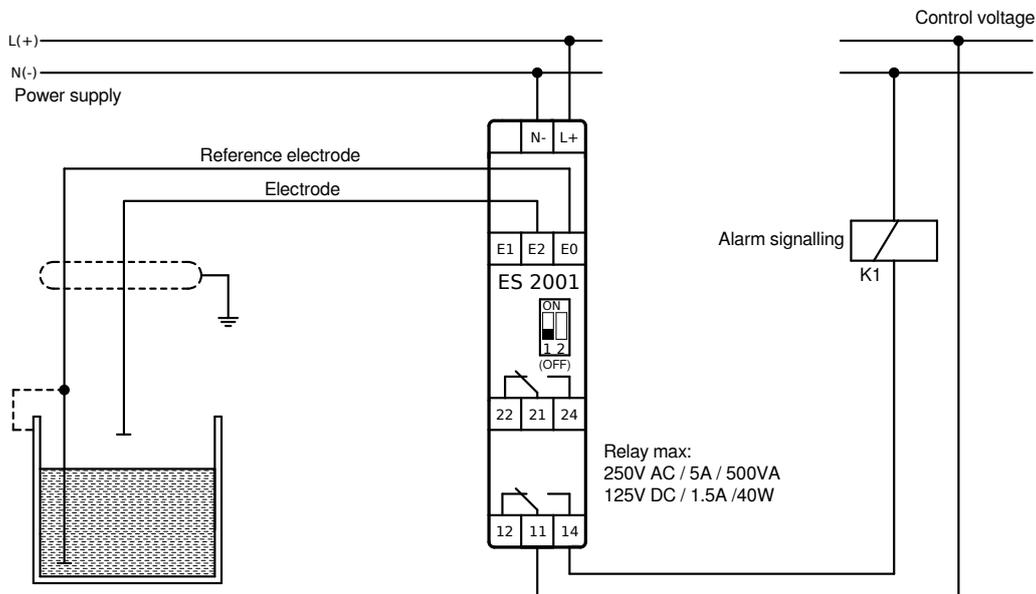
The relay is energized as soon as the liquid forms an electrical bridge between the level electrode and the reference electrode (or metal tank wall).

#### Dry run protection



Drain pump relay drops out when the electrode (E2) becomes free or in the event of a fault/power failure/cable break in the electrode control unit

#### Overflow alarm



The overflow alarm relay drops out when the electrode (E2) is immersed or in the event of a fault/power failure in the electrode control unit

**BAMO** INTERNATIONAL

22, Rue de la Voie des Bans · Z.I. de la gare · 95100 ARGENTEUIL

Tel +33 (0)1 30 25 83 20 Web [www.bamo.eu](http://www.bamo.eu)

Fax +33 (0)1 34 10 16 05 E-mail [export@bamo.fr](mailto:export@bamo.fr)

INSTRUCTION MANUAL  
AMPLIFIER RELAY ES2001

10-02-2026

M-530.01-EN-AH

LEV

530-01 /3

## ELECTRICAL CONNECTIONS (continuation)

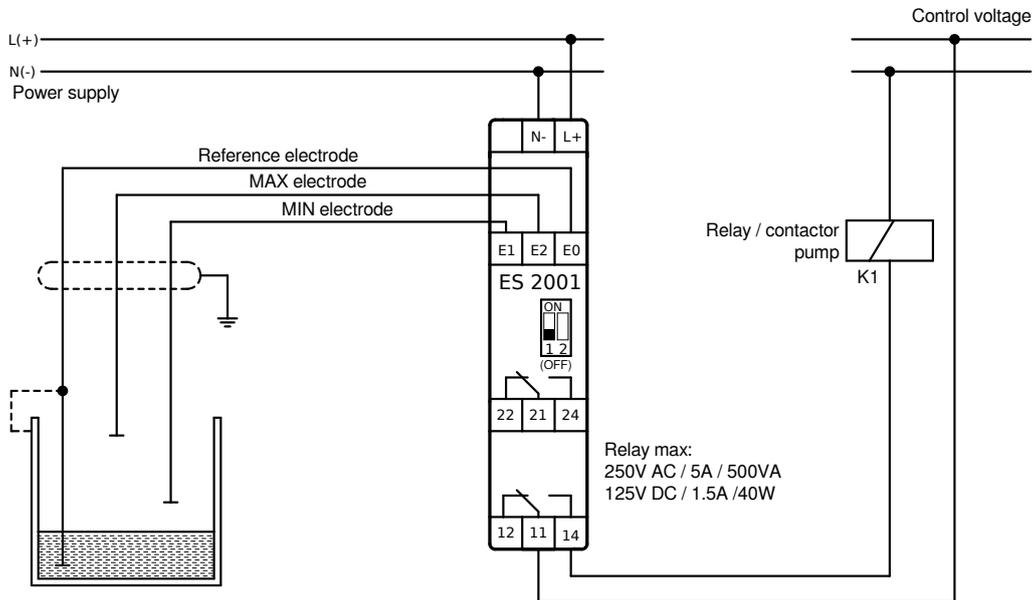
### 2. Automation of filling or draining (3 electrodes)

The self-holding function between two trigger points is carried out via the third electrode.

An LED shows the status of the relay.

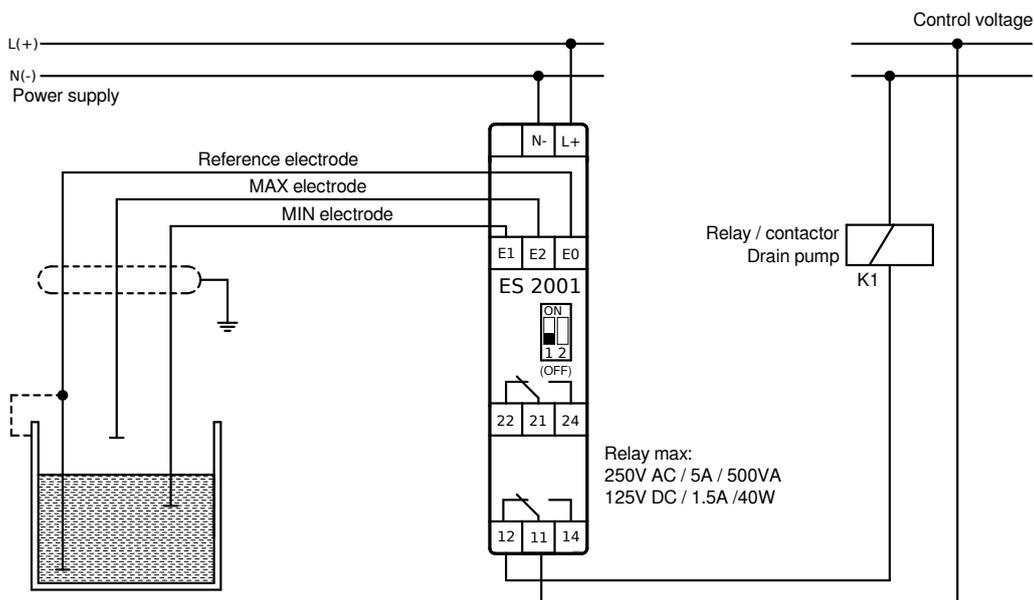
It lights up as soon as the relay is energised.

#### Filling the container



Relay of the filling pump activates when MIN-electrode becomes free; ...drops off when MAX electrode is immersed

#### Draining the container



Relay of the drain pump activates when MAX electrode immerses; ...drops off when MIN electrode becomes free

**BAMO** INTERNATIONAL

22, Rue de la Voie des Bans · Z.I. de la gare · 95100 ARGENTEUIL

Tel +33 (0)1 30 25 83 20 Web [www.bamo.eu](http://www.bamo.eu)

Fax +33 (0)1 34 10 16 05 E-mail [export@bamo.fr](mailto:export@bamo.fr)

INSTRUCTION MANUAL  
AMPLIFIER RELAY ES2001

10-02-2026

M-530.01-EN-AH

LEV

530-01 /4